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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,423	11/28/2001	John Whitman	4294.3US (98-1208.3)	2810
24247	7590	11/01/2005	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			PHAM, THANH V	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/996,423	Applicant(s) WHITMAN ET AL.	
	Examiner Thanh V. Pham	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7-11, 14-16 and 20-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-11, 14-16 and 20-32 is/are rejected.
- 7) ☒ Claim(s) 9, 16, 22-24, 26-28 and 30-32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/30/2005 and 09/09/2005 have been entered.

Response to Amendment

Claim Objections

2. Claim 8 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitation in claim 8 is required by claim 7 by use of "the material within the recesses" for antecedent basis in the second speed wherein the material previously formed in the first speed. If claim 8 is canceled, the dependency of claim 9 should be changed.

3. Claims 4, 11 and 20 are also objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In this

instance, claims 1, 7 and 14 disclose "spin-coating method" so the film would be formed and would inherently have a thickness, the amount and parameters of the spinning are not chosen by random and therefore are chosen to produce a desired thickness.

Claim Rejections - 35 USC § 112

4. Claims 1, 7 and 14, and their dependents (including claims 21, 25 and 29), are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "gradually" in claims 1, 7, 14, 21, 25 and 29 is a relative term which renders the claim indefinite. The term "gradually" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

It is understood from the most detailed paragraph [0041] that the first speed is 1,000 rpm in about one second to about five seconds, the second speed is 100 rpm for a period of about five seconds to about ten seconds, the third speed is at least 1,500 rpm without stating a duration and the fourth speed is about 50 rpm for a duration of about 19 to about 50 seconds. Paragraph [0041] and the whole specification do not provide the acceleration from the second speed to the third speed. Therefore, it is not clear at what rate the "gradually increasing" to a third speed is recited in claims 1, 7 and 14. See Indefinite Limitations must be Considered, MPEP 2143.02.

Further, claim 1's disclosure of

decreasing a rate of spinning to a substantially constant second speed; and following decreasing, gradually increasing a rate of the spinning to a substantially constant third speed that is greater than the first speed

wherein the decreasing step followed by the increasing step is against the above disclosed paragraph, creates ambiguous/confusing of the "constant second speed" with no posterior/subsequent. It is suggested that "following the second speed" would correct the ambiguity. It is also suggested that term "gradually" is deleted.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 7, 10 and 14, 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al. US 5,677,001 (provided by applicant on 04/08/2002).

The Wang et al. reference discloses a method of applying coating materials to surfaces in the manufacture of semiconductor devices, the coating method comprising: applying a material (pre-wetting agent, col. 5, line 19) to a substrate; spinning the substrate and the material at a first speed (200 rpm, col. 5, line 27) that permits the material to flow into recesses formed in the substrate or partially spread the material; spinning the substrate at a second speed (between 500 to 2000 rpm, col. 5, line 32) that permits the material within the recesses to set or permit some of the material to flow into one recess formed in the substrate; and following spinning the substrate at the second speed, gradually increasing a rate of spinning of the substrate to a third speed (about 1500 to 3000 rpm, col. 5, line 43) that is greater than the first speed. It would have been inherently included in the rotation speeds that the material when spread over the

surface of a wafer would fill the recesses at a first speed and would set at a second speed.

Response to Arguments

7. Applicant's arguments filed 09/30/2005 have been fully considered but they are not persuasive.
8. Applicant requests a reversal of the rejection of claims 1, 7 and 14 under 35 USC 112, second paragraph based on MPEP 2173.05(b) with the analysis from pages 6-10 in the argument. The examiner does not agree by the following reasons.

Firstly, it seems that the applicant still tries to explain the acceleration by the meaning of speed. The duration or dwell time of a speed is not the definition of acceleration. That dwell time is the duration in which a particular speed is performed unchanged. Acceleration is the speed per time or the changing of speed from one speed to another speed during a period of time. This period of time is not the dwell time. The unit of speed is distance per time, rpm or rounds per minute, miles/hour, meters/second, e.g. The unit of acceleration is (distance per time) per time or distance per (time square), rpm/s, miles/hour², m/s², e.g.

Secondly, in accordance to the above section of MPEP and applicant's statement "the term 'gradually' is a relative term, which is acceptable if one of ordinary skill in the art would readily understand its meaning in light of the specification", the examiner tries to look in the instant specification but finds no factually supported objective evidence for this relative term. Paragraphs [012], [0014], [0019] and [0040], after the term "gradually

increased", add "or ramped up" as an explanation without giving any further value(s) or number of rotations (rpm) per unit of time. The most detailed paragraph

[0041] By way of example, when ARCH 895 photoresist is used as the mask material, the substrate bearing stacked capacitor structure 10 is spun at a first speed of about 1,000 rpm until a substantially homogeneous layer is formed (e.g., about one second to about five seconds). The spinning rate is then decreased to about 100 rpm for a period of about five seconds to about ten seconds to allow the photoresist within containers 14 to begin setting. The rate at which stacked capacitor structure 10 is spun is then gradually increased to a third speed of at least about 1,500 rpm until the photoresist covering surface 12 reaches a desired, reduced thickness or until the photoresist is substantially removed from surface 12. The spin rate is then decreased again, this time to about 50 rpm, for a duration of about 19 to about 50 seconds to permit additional setting, or casting, of the photoresist.

[0041] clearly does not disclose any further regular or continuous value(s) or magnitude of acceleration/deceleration per unit of time or, at least, a time frame from one speed to another for the claimed "gradually increasing" term. One of ordinary skill in the art would not mistake the speed/velocity and the acceleration. One of ordinary skill in the art also would understand the meaning of a relative term with respect to something and not just state a value without concerning to or with respect to some other value as a base of judgment.

Thirdly, the rejection under 35 USC 112, second paragraph is based on the "gradually increasing a rate of the spinning to a substantially constant third speed" in claim 1, "gradually increasing a rate of spinning of the substrate to a third speed" in claims 7 and 14, not the gradually decreasing from the first speed to the second speed. Therefore, the argument based on the decreasing from the first to the second speeds *as negative acceleration* is irrelevant to the rejection *when it is clearly discussed the increasing or decreasing*.

Finally, in accordance to the second part of that extracting section of MPEP, it is agreed that the term "gradual" is defined as "advancing or progressing by regular or

continuous degrees” as in the American Heritage College Dictionary; therefore, the regular or continuous 20,000 rpm per second (provided by the applicant) of Wolf has been suggested as an adequate compromise spin-ramp **with respect to** various variable parameters **or** Yoshihara’s acceleration/deceleration (related tables in cols. 9 and 10) of 10,000/30,000 rpm per second wherein a number of rpm/sec is provided as a regular or continuous degrees of acceleration/deceleration from one speed to another speed. Gradually or not gradually, both Wolf and Yoshihara provide a degree of rpm over a time period for their acceleration/deceleration with respect to some values while the instant specification does not.

At least for the above reasons, the rejection under 35 USC 112, second paragraph is maintained as stated in the previous Office Action and repeated herewith.

Allowable Subject Matter

9. Claim 1 (and its dependent claims 2 and 3) would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

10. Claims 21, 25, 29 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims *provided also the limitations of the base claims are amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph.*

11. Claims 9, 16, 22-24, 26-28 and 30-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all

including all of the limitations of the base claim and any intervening claims *provided also the limitations of the base claims are amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph.*

12. The following is a statement of reasons for the indication of allowable subject matter: the cited prior art, individually or in combination, does not disclose or suggest all of the claimed elements in the present application wherein at least three consecutively different speeds are performed with second speed slower than first speed and third speed greater than first speed.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh V. Pham whose telephone number is 571-272-1866. The examiner can normally be reached on M-T (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WP

10/25/2005


George Fourson
Primary Examiner